Modelling of material deposition in gaps of castellated surfaces in fusion experiments — •D. Matveev[1,2], A. Kirschner[1], D. Borodin[1], A. Litnovsky[1], V. Philipps[1], G. Van Oost[2] — [1]Institut für Energieforschung - Plasmaphysik, Forschungszentrum Jülich GmbH, Association EURATOM-FZJ, Trilateral Euregio Cluster, Jülich — [2]Department of Applied Physics, Ghent University

Tritium co-deposition and retention are critical issues for ITER. Experiments show that fuel-rich carbon layers are formed on plasma shadowed areas and especially in narrow gaps between tiles of castellated surfaces. Most of proposed T-removal techniques are not able to access these gap areas. Therefore, understanding of physical phenomena underlying impurity deposition inside gaps is of crucial importance. Experiments with ITER-like castellated limiters performed at TEXTOR show not only side surfaces but also the gap bottom to accumulate significant carbon deposits. 3D Monte-Carlo code (3DGAP) has been developed as a part of modelling activities for these experiments. The code is based on simulation of neutral particle transport inside a gap. Different sources of incoming particles, particle reflection from side walls of the gap, elastic neutral collisions and chemical erosion of carbon layers can be studied. The role of these factors has been investigated with respect to carbon deposition inside gaps. It has been shown that modelled carbon deposition profiles agree with experimental observations for side surfaces of the gap, while some discrepancies have been found for the gap bottom. A detailed analysis of modelling results will be presented in this contribution.

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